

Baton Rouge Community College

Academic Affairs Master Syllabus

Date Approved or Revised: July 22, 2008

Course Name: Calculus II
Course Number: MATH 211

Lecture Hrs. 5

Lab Hrs. 0

Credit Hrs. 5

Course Description: This is the second course of a three-course sequence. The course continues with additional applications of the integral relating to volume, work, arc length, and surface area. Additional techniques of integration for a wide variety of functions are also developed. Other topics include: parametric equations, polar coordinates, infinite sequences and series, Taylor Polynomials, and vectors.

Prerequisites: MATH 210

Co-requisites: None

Calculator Highly Recommended: TI83 or TI84 or Scientific

Suggested Enrollment Cap: 30

Learning Outcomes: Upon successful completion of this course, the student will be able to:

- Apply the techniques of integration to evaluate definite, indefinite, and improper integrals;
- Apply the techniques of integration to solve problems of area, volume, arc length, work, force, moments, and centers of mass;
- Determine the convergence or divergence of a sequence and series;
- Represent a function using Taylor, Maclaurin, or Power Series;
- Analyze the equation for a basic conic section;
- Analyze a curve using parametric equations; and
- Convert equations from rectangular to polar form and vice versa.

General Education Learning Outcomes: This course supports the development of competency in the following areas. Students will:

- Think critically, collect evidence (statistics, examples, testimony) and make decisions based on the evidence, comprehend and analyze texts, and solve problems using methods of critical and scientific inquiry; and
- Organize, analyze, and develop useful information useful by employing mathematical principles.

Assessment Measures:

- A comprehensive final exam; and
- Instructor created exams and or homework

Information to be included on the Instructors' Course Syllabi:

- **Disability Statement:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.
- **Grading:** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor's and/or the department's policy for make-up work. For example in a speech course, "Speeches not given on due date will receive no grade higher than a sixty" or "Make-up work will not be accepted after the last day of class."
- **Attendance Policy:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.
- **General Policies:** Instructors' policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.
- **Cheating and Plagiarism:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.
- **Safety Concerns:** In some programs this may be a major issue. For example, "No student will be allowed in the safety lab without safety glasses." General statements such as, "Items that may be harmful to one's self or others should not be brought to class."
- **Library/ Learning Resources:** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

Expanded Course Outline:

- I. Applications of Integration
 - A. Area of a Region Between Two Curves
 - B. Volume: The Disk Method
 - C. Volume: The Shell Method
 - D. Arc Length and Surfaces of Revolution
- II. Integration Techniques, L'Hopital's Rule, and Improper Integrals
 - A. Basic Integration Rules

- B. Integration by Parts
- C. Trigonometric Integrals
- D. Trigonometric Substitution
- E. Partial Fractions
- F. Integration by Tables and Other Integration Techniques
- G. Indeterminate Forms and L'Hopital's Rule
- H. Improper Integrals

III. Infinite Series

- A. Sequences
- B. Series and Convergence
- C. The Integral Test and p-Series
- D. Comparisons of Series
- E. Alternating Series
- F. The Ratio and Root Tests
- G. Taylor Polynomials and Approximations
- H. Power Series
- I. Representation of Functions by Power Series
- J. Taylor and Maclaurin Series

IV. Conics, Parametric Equations, and Polar Coordinates

- A. Conics and Calculus
- B. Plane Curves and Parametric Equations
- C. Parametric Equations and Calculus
- D. Polar Coordinates and Polar Graphs
- E. Area and Arc Length in Polar Coordinates
- F. Polar Equations of Conics and Kepler's Laws